### (19) World Intellectual Property Organization

International Bureau



# 

(43) International Publication Date 20 January 2005 (20.01.2005)

**PCT** 

### (10) International Publication Number WO 2005/004724 A1

(51) International Patent Classification7: 6/00, 19/00

A61B 6/12,

(21) International Application Number:

PCT/IB2004/051147

7 July 2004 (07.07.2004) (22) International Filing Date:

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

03102090.2

10 July 2003 (10.07.2003) EP

16 September 2003 (16.09.2003) 03103405.1

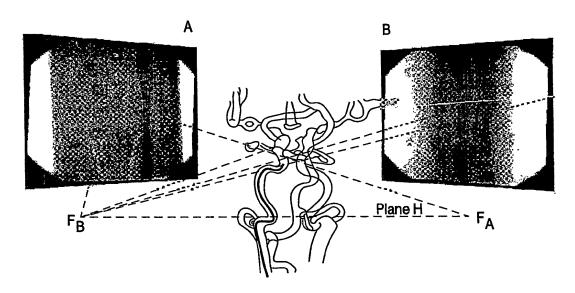
- (71) Applicant (for all designated States except US): KONIN-KLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): DESMEDT, Paul,

A., C. [BE/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). BAERT, Shirley, A., M. [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). NIESSEN, Wiro, J. [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

- (74) Agent: COHEN, Julius, S.; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM. ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: APPARATUS AND METHOD FOR NAVIGATING AN INSTRUMENT THROUGH AN ANATOMICAL STRUC-TURE



(57) Abstract: Apparatus for navigating an instrument through an anatomical structure of a patient's body volume, comprising a table for supporting the patient and at least a first C-arm having a first X-ray source and a first X-ray detector for acquiring a first series of 2D-images of the instrument whilst manoeuvering through said anatomical structure, and further comprising a processing unit for the images which unit connects to a memory device, whereby the memory device holds pre-determined 3D-images of the patient's anatomical structure, and the processing unit is arranged for processing the 2D-images of the instrument and the 3D-images of the anatomical structure so as to provide merged 3D-images of the instrument that in use manoeuvers through said anatomical structure.

## WO 2005/004724 A1



European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

#### Published:

with international search report